

Occupational Safety and Health (OSH) Management System at C-AD

Prepared by
Ed Lessard

Collider-Accelerator Department
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C-A Department Mission

■ Mission

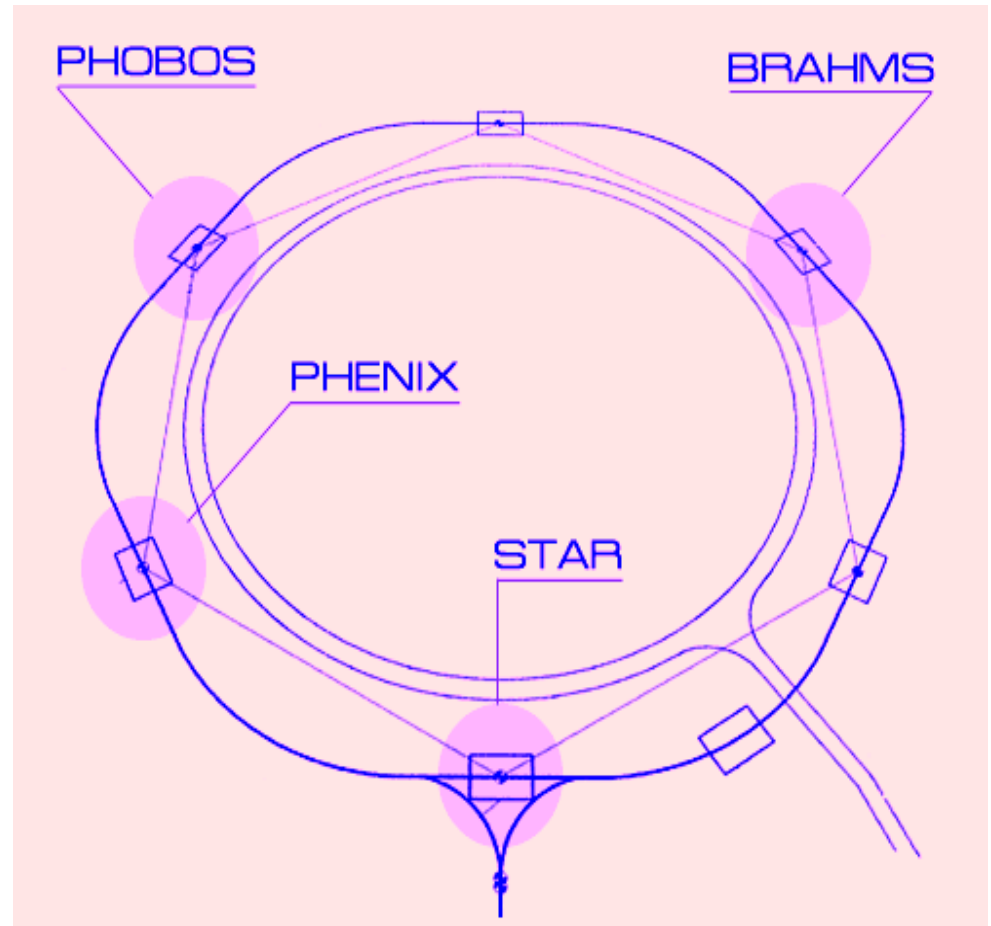
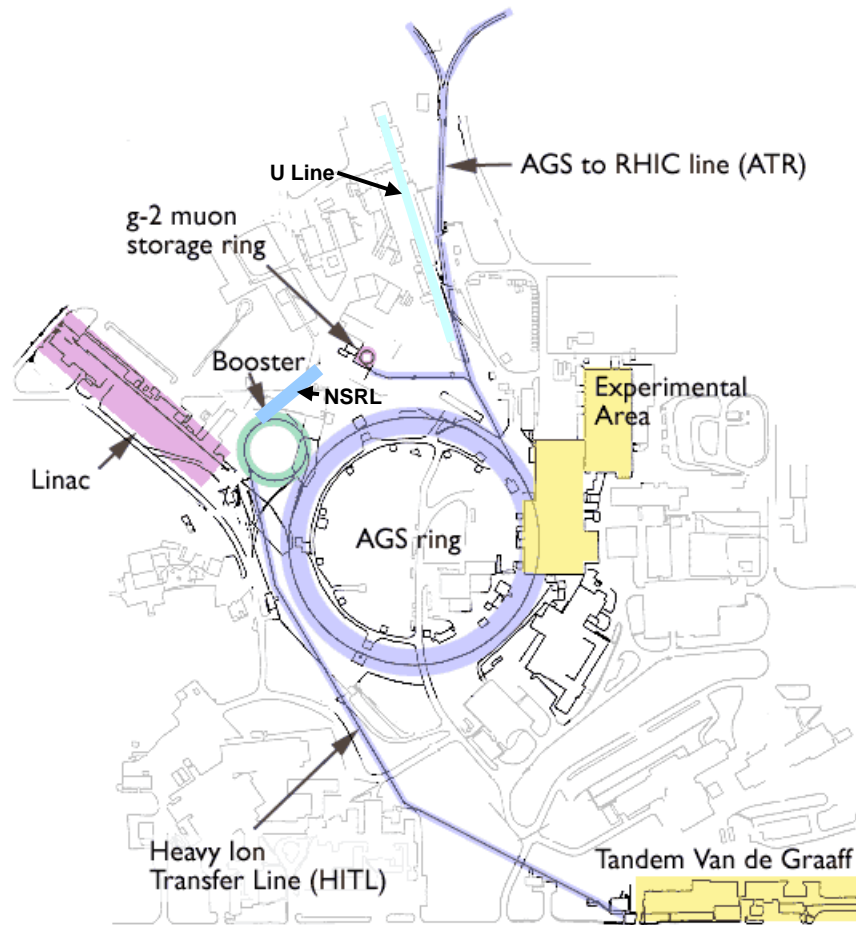
- Develop, improve and operate ion accelerators
- Support the experimental program
- Design and construct new accelerator facilities
- Excellence in environmental responsibility and safety

FY05 Contract Critical Outcome

- **Science and Technology**

*BNL will deliver innovative, forefront science and technology aligned with DOE strategic goals in a **safe, environmentally sound, and efficient manner**, and will conceive, design, construct, and operate world-class user facilities*

C-A Department Facilities



Benefits of OHSAS 18001 Registration

- Periodic audits by a third party provide the discipline that C-AD/SMD needs to implement an effective working system. Without the discipline, motivation for occupational safety and health programs wanes and the system, while described on paper, is no longer practiced at the working level
- Registration provides DOE, NASA, NRC, NSF, Battelle, Stony Brook and other stakeholders with independent verification that C-AD/SMD are serious about addressing health and safety issues
- Registration may open international interest in our services and products

Significant Safety and Health Hazards

- Ionizing and non-ionizing radiation
- Hazardous, radioactive or toxic materials
- Electrical energy
- Magnetic fields
- Flammable, combustible and explosive gases and liquids
- Oxygen deficiency
- Kinetic and potential energy
- Thermal energy
- Cryogenic temperatures
- Noise
- Protracted/irregular hours
- Housekeeping

Significant Causes of Injury as Seen by Liberty Mutual (BNL's Insurer)

Cause of Injury	Cost	% Total Cost
Overexertion	\$12.5B	27.3%
Falls on Same Level	\$5.7B	12.6%
Bodily Reaction	\$4.7B	10.2%
Falls To Lower Level	\$4.1B	9.0%
Struck by Object	\$3.9B	8.6%
Repetitive Motion	\$2.9B	6.3%
Highway Incident	\$2.3B	5.1%
Struck Against Object	\$1.9B	4.1%
Caught in, Compressed by	\$1.7B	3.7%
Assaults & Violent Acts	\$0.4B	1.0%

4.1 General Requirements Of The OSH Management System

- General requirements layout expectations for:
 - Health and Safety Management System
 - Occupational Safety and Health Policy
 - Planning Function
 - Implementing Function
 - Monitoring and Measurement Function
 - Checking and Corrective Action Function
 - Management Review Function

4.2 OSH Policy

- BNL ESSH Policy
- BNL Vision Statement
- OPM 1.10 Collider-Accelerator ESH Policy
- OPM 1.10.4 C-AD/SMD OSH MS Program



4.3 Planning

- 4.3.1 Planning for hazard identification, risk assessment and risk control
- 4.3.2 Legal and other requirements
- 4.3.3 Objectives
- 4.3.4 OSH management program

4.3.1 Planning For Hazard Identification, Risk Assessment And Risk Control

- C-AD OPM 2.28 Work Planning for Operations
- C-AD OPM 2.29 Work Planning for Experiments
- SMD OPM 2.12 Work Planning and Control System
- C-AD OPM 9.2.1 Reviewing ESH for Experiments
- C-AD OPM 9.3.1 Reviewing ESH for Accelerators
- C-AD OPM 9.5.2 ALARA Design Review
- C-AD OPM 9.5.5 ALARA Job Review
- C-AD OPM 9.1.1 Radiation Safety Committee Review
- Change Management Checklist (BNL 18001-004)
- Facility Risk Assessments (BNL 18001-001)
- Job Risk Assessments (BNL 18001-002)
- Initial Workplace Hazard and Risk Assessments
- Safety Assessment Documents (see web page:
http://www.rhichome.bnl.gov/AGS/Accel/SND/c-a_sad_and_ase.htm)

Jobs Evaluated for OSH Risks

- Transportation
- Material handling-machinery
- Material handling-manual
- Electrical work- routine
- Electrical work-high energy
- Electrical working hot
- Radiation/contamination work
- Work with lasers
- Pressurized system work
- Vacuum system work
- Biological/animal work
- Cable pulling
- Operations
- Emergency response
- Waste handling
- Work with hazardous materials
- Adding cooling tower chemicals
- Hi-pot testing
- Crane use by C-AD staff
- Forklift use by C-AD staff
- Welding/welding helper
- Tours
- Confined space work
- Machining Work (lathes, drill presses)
- Office Work
- Magnet Assembly

Facilities Evaluated for OSH Risks

- Siemens Motor Generator
- Westinghouse Motor Generator
- He Reliquifier
- Shops
- Offices
- STAR
- PHENIX
- PHOBOS
- BRAHMS
- NSRL
- Building 912/U-Line/g-2
- Warehouses/storage facilities
- Equipment Testing Areas
- EBIS
- eCooler
- Waste Yard
- 90 Day Area/Satellite Areas
- Accelerators
- Pre-Injectors
- Collider
- Locked Electrical rooms
- Locked Electrical Caged Areas
- Cryogenic Refrigerator Room
- Cryogenic Compressor Room
- Decommissioning Locations

General Areas/Activities Evaluated for OSH Risks

- Electrical installations and activities
- Fire protection throughout
- Radiation areas and protection activities
- Areas with potential for oxygen deficiency
- Housekeeping throughout
- Noise areas
- Material handling activities

Benefits of OSH Risk Assessments

- Increases worker involvement
- Focuses us to address actual injuries
- Realigns OSH programs based on experience
- Reduces risk and injuries

4.3.2 Legal And Other Requirements

- Legal and Other Requirements (BNL 18001-003)
- SBMS OSH Management System Description
- C-AD Conduct of Operations Agreement
- C-AD Operations Procedure Manual
- Accelerator Safety Envelopes

4.3.3 Objectives

- BNL Contract
- BNL Safety Improvement Plan
- FY05 C-AD/SMD Objectives and Targets

4.3.4 OSH Management Program

- OSH MS Objectives/Targets and OSH Management Plans (BNL 18001-006)
- C-AD/SMD OSH Management Plan for Accelerators, Experimental Areas, Shops and Offices

C-AD/SMD FY05 Occupational Safety and Health Objectives

- An injury free workplace; reduce injury rates
- Compliance with OSH requirements in SBMS
- Streamline OSH/EMS Management Systems
- Move towards 3rd party registration of OSH Management System for SMD*
- Maintain 3rd party registration for C-AD
- Improve Electrical Safety Programs
- Meet BNL requirements on closure of OSHA findings
- Renew Emphasis on Fire Protection
- Improve Material Handling Programs

* OHSAS 18001 Registration

Example C-AD/SMD FY05 OSH Targets

- Develop manual-lifting guidelines to reduce overexertion injuries
- Ensure hoisting and rigging are performed by qualified personnel
- Develop a Job Risk Assessment for demolition work
- Continue to increase worker involvement in the occupational safety and health programs
- Implement more effective housekeeping programs in work areas
- See <http://www.rhichome.bnl.gov/AGS/Accel/SND/18001/OSH%20Targets%20and%20Objectives%20for%20FY05.pdf>

4.4 Implementation And Operation

- 4.4.1 Structure and responsibility
- 4.4.2 Training, awareness and competence
- 4.4.3 Consultation and communication
- 4.4.4 Documentation
- 4.4.5 Document and data control
- 4.4.6 Operational control
- 4.4.7 Emergency preparedness and response

4.4.1 Structure And Responsibility

- OPM 13.1.1 Q, OSH and E Management System
- OPM 1.10.4.c C-AD and SMD OSH Contacts and Responsibilities
- Organization Charts
- C-AD Committees List
- R2A2s

4.4.2 Training, Awareness & Competence

- BNL Training Requirements and Needs Assessment
- OPM 1.12 Training and Qualifications Plan
- Job Training Assessments (JTAs)
- C-A/SMD OSH Training Packages
- FAQs on OSH for Users, Staff and Managers
- C-AD Access Training Programs
- Russian and Japanese Translations of OSH Rules
- BNL OHSAS 18001 Awareness Training
- C-AD/SMD OHSAS 18001 Awareness Training

4.4.3 Consultation And Communication

- OSH Consultation/Communication (BNL 18001-008)
- SBMS SA Critiques
- OPM 9.8.1 WOSH Committee
- WOSH Meeting Minutes
- OPM 9.9.1 Safety Walks
- OPM 10.1 Occurrence Reporting
- OPM 1.10.3 Guidance on Community Involvement
- OPM 9.4.1 Safety Inspections
- OPM 9.4.2 Self-Evaluation
- OPM 9.4.5 Accident/Injury Investigations
- OPM 2.28 Work Planning
- Safety Memoranda, Newsletters, Surveys, Emails

4.4.4 Documentation

- OPM 1.10.4 OSH MS Program Description
- OPM 1.10.4.a OSH Document Flow-down Matrix
- OPM 1.10.4.c OSH Contacts and Responsibilities

4.4.5 Document And Data Control

- OPM 1.4 Plans, Policies and Procedures
- OPM 1.4.1 Format of Plans and Procedures
- OPM 1.4.3 Implementing New Procedures
- OPM 1.4.3.a Permanent Procedure Tracking Form For New or Revised Procedures
- OPM 1.4.3.b Permanent Procedure Tracking Form For Canceling Procedures
- OPM 1.4.5 Procedure for Implementing Hand Processed Changes
- OPM 13.6.1 Engineering Drawings and Specs

4.4.6 Operational Control

- Facility Specific OSH Operational Controls Records:
 - 14.31.1 Occupational Safety and Health Operational Controls Record for C-AD Accelerators and Collider
 - 14.32.1 Occupational Safety and Health Operational Controls Record for C-AD Experiment Construction, Operations, Testing, Maintenance and Emergency Response
 - 14.33.1 Occupational Safety and Health Operational Controls Record for C-AD and SMD Offices
 - 14.34.1 Occupational Safety and Health Operational Controls Record for C-AD and SMD Shops

4.4.7 Emergency Preparedness And Response

- OPM Chapter 3, Emergency Procedures
- 2004 Emergency Drill Report

4.5 Checking And Corrective Action

- 4.5.1 Performance measurement and monitoring
- 4.5.2 Accidents, incidents, non-conformances and corrective and preventive actions
- 4.5.3 Records and records management
- 4.5.4 Audit

4.5.1 Performance Measurement And Monitoring

- FY04 Self Assessment Report
- FY05 Self-Assessment Program
- Performance Indicators for C-AD
- Critiques
- OPM 13.10.1 Independent Assessment
- Individual Dose Data
- OPM 6.1.3 Response to Chipmunk Alarms
- Tier 1 – OPM 9.4.1 Safety Inspections
- OPM 9.4.2 C-A Self Evaluation
- OPM 9.9.1 Safety Walks
- External Assessments and Surveillances

4.5.2 Accidents, Incidents, Nonconformances And Corrective And Preventive Actions

- OPM 9.4.5 C-A Accident / Incident Investigation
- OPM 10.1 Occurrence Reporting
- Critiques
- Tier 1
- Family ATS

4.5.3 Records And Records Management

- OPM 13.4.1 Records Management
- OPM 13.4.2 Records Management Index
- OPM 13.4.2.c List and Retention Schedule for C-AD/SMD Occupational Safety and Health (OSH) Records and Documents

4.5.4 Audit

- OSH Audit Checklist (BNL 18001-005)
- FY05 C-A Internal OSH Audit Report
- FY04 C-A Internal OSH Audit Report
- Audit Schedule

4.6 Management Review

- Management Review (BNL 18001-007)
- FY04 Management Review Documents